

A new subspecies of *Papuina antiqua* (Adams & Reeve, 1850) from Yapen Island, Papua, Indonesia

Jeff Parsons¹ and John Abbas²

¹ 47 Elizabeth Street, Aitkenvale, Queensland, Australia 4814

jeffonese@yahoo.com.au

² Lihue, Kauai, Hawaii — Jalan Demaga Baru, Muara Angke, Jakarta Utara Pos 14450,
Jakarta, Indonesia john123abba@yahoo.com

ABSTRACT This paper describes a new subspecies of *Papuina antiqua* (Adams & Reeve, 1850) from forested hills east of Serui on the south coast of Yapen Island in Papua Province, Indonesia. The pink coloration of the early whorls and minor differences in sculpture separates it from *Papuina antiqua* and its other named subspecies and form.

KEY WORDS *Papuina antiqua*, *Papuina antiqua rosasumma*, Yapen Island, Papua, Indonesia

INTRODUCTION

In 2007, the junior author went to Serui (Seroei) on the southern coast of Yapen Island and found no snails west or north of the town. Travelling to the end of the road about 15 to 20 km east of Serui, the junior author found snails on the forested hills north of Kainut village. Among them was a white shell of the genus *Papuina* von Martens, 1860 with a pink top and no more located until the end of September 2019, when a local found more specimens while collecting snails for the authors. The new specimens all have the pink top and after a short study period, they have been determined to be a new subspecies of *Papuina antiqua* (Adams & Reeve, 1850) restricted to the Angkaisera District on Yapen Island.

Materials and Methods.

Shells were measured using digital Vernier callipers (0.01 mm resolution), sculpture examined under low magnification (10x) using a jeweller's loupe, and weighed using a pocket-

sized electronic scale (capacity 300 g x 0.01 g). Whorl count includes the apex and counted precise to 0.125 (1/8) whorl. 'Paries' (adj. parietal) refers to the 'inner apertural wall' and 'palatum' (adj. palatal) refers to the 'outer apertural wall'. Relative shell sizes (height) for the genus *Papuina* mentioned are as follows: small < 20 mm, medium 20-35 mm and large > 35 mm.

Four shells make up the type series. All but one of the shells examined had formed an outer lip: adults have a thickened and rimmed lip (paratype 3 had its protoconch squashed during early development), one subadult (paratype 1) with a rough thin lip and one juvenile without a lip (paratype 2). Photo and image credits appear below each image. The holotype description was determined from the shell morphology of dry empty shells obtained by the junior author. Comparative material comprised of shells from the private collections of the authors, images of type shells from the literature and images of museum types or specimen shells.

Abbreviations used for museums and private collections:

ANSP:	The Academy of Natural Sciences of Drexel University, Philadelphia, United States of America
NHMUK:	Natural History Museum, London, England, United Kingdom
ZMB:	specimen label code at Museum für Naturkunde, Berlin, Germany; previously known as Zoologisches Museum Berlin
JA:	John Abbas collection
JP:	Jeff Parsons collection

Abbreviations for shell morphometry, shell coiling and other:

D:	shell width (abbreviation for 'diameter' as per literature usage)
H:	shell height
H/D:	shell height/shell width ratio
N:	whorl count
W:	shell weight
JA	data, observations, comments, photos or other by John Abbas
JP	data, observations, comments, photos or other by Jeff Parsons

Taxonomic remarks.

P. antiqua complex according to van Benthem Jutting (1965):

P. antiqua (Adams & Reeve, 1850)

Syn. *P. antiqua leonardi* (Tapperone Canefri, 1886)

Syn. *P. antiqua horderi* (Sowberby III, 1889)

P. antiqua var. *xanthosoma* (Pilsbry, 1891)

Although van Benthem Jutting (1965) studied and selected a lectotype from the types of *P. antiqua leonardi*, and studied the holotypes of *P. antiqua* and *P. antiqua horderi*, she did not record their museum catalogue/registration numbers. This has made it difficult to track down all of those types and have them photographed. Until we have studied all types, we here accept *P. antiqua leonardi* and *P. antiqua horderi* as valid subspecies, and maintain *P. antiqua* var. *xanthosoma* as a varietal name until confirmed otherwise.

SYSTEMATICS

Family: Camaenidae Pilsbry, 1895

Subfamily: Hadrinae Iredale, 1937

Genus *Papuina* (f.) von Martens, 1860

Type species: *Helix lituus* Lesson, 1831

Papuina antiqua rosasumma Parsons and Abbas,
new subspecies

(Figures 1-2 and Plate 1, Figures 3-5 and 9-10)

Description. (Holotype) Medium-sized conical shell, semi-obtect umbilicate, solid and translucent. Spire high conical; apex subacute, exsert (protruding). Surface shiny, covered with wrinkled spiral striatulations overlain by close-set growth lines and threads; spirals coarser on the protoconch, forming granules on oblique elements; growth threads on last whorl coarser adsuturally behind the lip, subplicatulate. Shell denuded of periostracum.

Whorls 5.25, regularly increasing and hardly descending in front; upper surface flattened on lower whorls, convex apically; base convex, contracted behind the lip to form a slight bulge near the umbilicus. Periphery subangular on spire whorls with a crenulated filiform carina (carinula) becoming obsolete on the penult, and rounded on the last whorl. Suture deep, impressed below the periphery on teleoconch whorls above the penult. Protoconch rose coloured, fading away as an infrasutural band on the second whorl. Teleoconch pale grey becoming albous (dull white) on lower whorls.

Aperture lunate-oval, wide, oblique, margins convergent and faintly effuse laterally, not forming a papuinoid notch at the periphery. Palatum white and parietal callus only a colourless film. Parieto-labral tubercle is a c. 1 mm, round lump on the ascending lip terminus. Outer lip off-white, thickened and expanded throughout, its edge reflexed to form a rim; upper margin declivous and arched terminally; rounded peripherally and basally. Columella off-white, incrassate, erect and a tooth-like nodule near its base. Columellar margin broadly

dilated, partially concealing a narrowly compressed umbilicus.

Type Material. Four shells from the type locality (2 adults, 1 subadult and 1 juvenile). Holotype (white, NHMUK 20200003, Figure 1) H 32.67 mm, D 25.82 mm, H/D 1.27, N 5.25 & W 1.40 g. Paratype 1 (yellow subadult, NHMUK 20200004/1, Plate 1, Figure 3); Paratype 2 (white juvenile, NHMUK 20200004/2, Plate 1, Figure 4); Paratype 3 (white adult, JP, Plate 1, Figure 5).

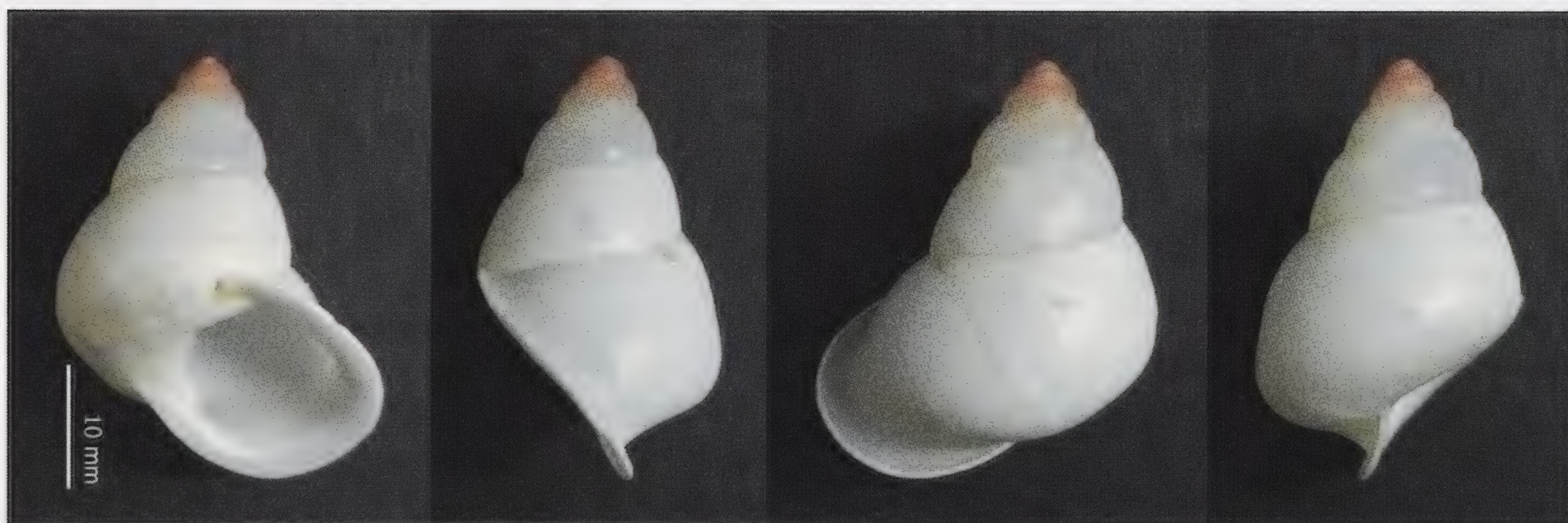


Figure 1. Holotype of *Papuina antiqua rosasumma* n. ssp. NHMUK 20200003 [Photos by JP]

Other Material. Two adult shells from the type locality (JP, Plate 1, Figures 9 and 10)

Measurements. (Five shells, juvenile excluded) H 32.67-37.12 (av. 34.40) mm, D 25.82-31.47 (av. 27.88) mm, H/D 1.18-1.30 (av. 1.24), N 5.0-5.5 (av. 5.275) & W 1.15-2.16 (av. 1.644) g

Type locality. Forested hills behind Kainut village, Angkaisera District, on the south coast of Yapen Island, NE Cenderawasih (Geelvink) Bay in Papua Province, Indonesia.

Distribution. Currently known only from the type location.

Ecology/Habitat. Found on trees in vine forest.

External features of animal. Body blackish purple, foot whitish and tail creamy; whole surface granulated, but not colour differentiated. The optic and sensory tentacles blackish purple with creamy tips, eyes paler. Mantle, its collar and lappets, and pedal (or median longitudinal) groove are not visible in the image (Figure 2); and sole not observed.

Soft parts. Not available for study.

Etymology. The name *rosasumma* (f.) refers to the pink or rosy top of the shell, Latin *rosa*- (f.) “rose-coloured, rosy” + Latin *summa* (f.) (adj., nom. sing.) “summit, topmost, at the top”.



Figure 2. Live *Papuina antiqua rosasumma* n. ssp.
[Photo by JA]

Shell Variation. All shells lack a pattern and denuded of their periostracum. The subadult (Plate 1, Figure 3) and juvenile (Plate 1, Figure 4) shells lack the columellar “tooth or lobe” present in the adult shells, which varies from small to medium in size. Shell shape varies from conical with a flattened upper surface (Figure 1, and Plate 1, Figure 3) to turbanate with rounded whorls (Plate 1, Figure 10). The semi-obtect umbilicus is narrowly compressed, open or closed. Surface sculpture as per holotype, finer on whole shell or slightly coarser on protoconch. The lateral profile of the aperture is flat or slightly concave without forming a papuinoid notch at the periphery, *i.e.* outer lip faintly effuse or not. Parieto-labral tubercle present or absent. Outer lip margin rounded throughout or upper margin declivous. Shells are medium to large in size. Upper surface of all whorls convex or flattened on lower whorls. Filiform carina on early whorls visible above the suture or not. Base convex, contracted behind the lip to form a slight bulge near the umbilicus.

Ground colour of the teleoconch is pale grey becoming albous (dull white) on later whorls, or pale lemon yellow (Plate 1, Figure 3). For

albous shells: A) all early whorls are rose coloured (Figure 2), B) protoconch is rose coloured (Figure 1, and Plate 1, Figures 4 and 5) or purplish rose (Plate 1, Figure 9), or C) protoconch is white with a rosy infrasutural band (Plate 1, Figure 10). The yellow shell (Plate 1, Figure 3) has a pale orange protoconch with a pink infrasutural band. The squashed protoconch of paratype 3 occurred during early development of the shell. Parietal coloration is pale buff, distinctly coloured (Plate 1, Figure 5) or only tinted (Plate 1, Figures 4 and 10), or coloured as per the penult. Interior or palatal coloration of albous shells is white and cream in the yellow shell. Outer lip of adult shells is white and pallid grey in the subadult shell.

DISCUSSION

Shell size and shape variation for *P. antiqua rosasumma* n. sp. falls within the range of variation seen in, and recorded for, the other members of the *P. antiqua* complex and all have a variable columellar tooth. *Papuina a. rosasumma* n. ssp. differs from all other members of the *P. antiqua* complex by the rose-coloured early whorls, a filiform carina on early whorls and a slight bulge that is more pronounced in the base near the umbilicus.

The holotype of *P. antiqua* (Plate 1, Figure 11; Cuming Collection, NHMUK) has a dead white (greyish white) finely sculptured shell that differs in having a rather obtuse apex and an inflated last whorl. It is described as having an effusely reflected outer lip, whereas in *P. a. rosasumma* n. ssp. it is faintly effuse or not. The type locality of Unsang, Borneo (Sabah) is far out of the expected range for Papuinids and probably a case where traders released the snail at this location. Shells found on Yapen and Muswar (Misowaar) Islands are considered as being *P. antiqua*, have the following differences.

Shells from Yapen Id. collected in the 19th century often appear in museum collections identified originally as '*leonardi*' and then corrected to '*antiqua*'. They are usually unicoloured albous or off white (Plate 1, Figure 16) and others are dual-coloured, as are recently collected shells, which are a bone-coloured shell with a cream coloured protoconch (Plate 1, Figure 8). A recently collected faded cream coloured shell has a primrose yellow protoconch (Plate 1, Figure 7). Shells from Muswar Id. are quite variable in colour: uniform white (Plate 1, Figure 15), light brown, fawn or pale yellow (Fulton, 1910a, 1910b). Parietal coloration is the same as the penult or pale buff tinted (Plate 1, Figure 15) and the palatum is off white, even in the faded yellow shell (Plate 1, Figure 7). Shells studied have a subacute apex, worn protoconch and a fine transverse sculpture on the teleoconch, obsolete spirally.

P. antiqua leonardi differs in having a subacute apex and the oblique subgranular sculpture seen on the protoconch of *P. a. rosasumma* n. ssp. that extends over the shell crossing over weaker spiral striae. It has more rounded whorls, becoming flat at the suture and the last one inflated with a subangular periphery. Shells are unicoloured, pale citrine from Ansus on Yapen Id. (Plate 1, Figure 12) and reddish from Korido on Misor (Supiori) Id., and the palatum is citrinous and brownish-red respectively. The other shell from Ansus figured here (Plate 1, Figure 17) is pale smoke grey due to post-mortem burial.

The unicoloured citrine shell of *P. antiqua horderi* (Plate 1, Figure 13) differs in having convex whorls with a finer sculpture, a slightly inflated last whorl, obsoletely angled periphery, an elevated spire and acute apex. Described as having six whorls. However, Fulton (1910b) said the count should really be 5½.

P. antiqua var. *xanthosoma* (Plate 1, Figure 14) differs in having a subobtuse apex, pale orange paries, whitish palatum and fewer whorls (4½). The impressed suture is shallower and margined below by an impressed line. Pilsbry originally described it as being lemon yellow and paler on the last whorl, and has since faded to a straw colour. The flatter look of the early teleoconch is due to a growth error.

Papuina translucida (Quoy & Gaimard, 1832) (Plate 1, Figures 6 and 18) has a fragile to solid, diaphanous to translucent and often larger shell with an acute apex and higher whorl count (6). The flattened whorls are shouldered above and subangular at the periphery, and the last one is large with an angular to subrounded base. Shell is albous (matte white) or albidous (dull whitish) with a cord-like sutural margin and a coarser sculpture of distinct spiral striae and plicae. Aperture is flared, outer lip is effuse peripherally and crenulated behind. The pyramidal spire often has its top broken off. Columellar tooth is often much larger, and ridge-like.

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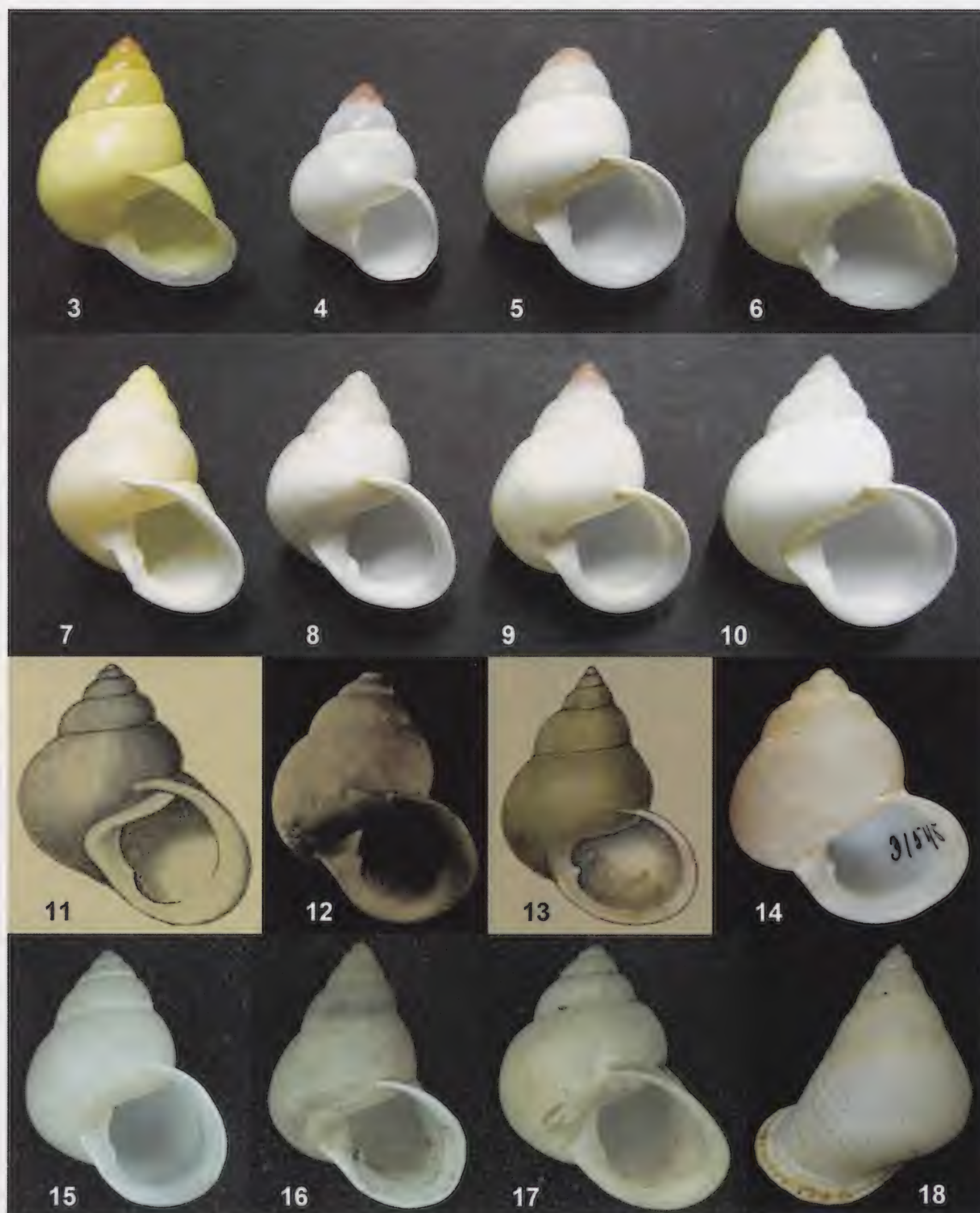


Plate 1. Comparison of the *Papuina antiqua* complex with *P. translucida*.

First row, Figures 3-5. *Papuina antiqua rosasumma* n. ssp., 3. Paratype 1, 4. Paratype 2 and 5. Paratype 3; **Figure 6.** *P. translucida* Manokwari (JP); **Second row, Figures 7-8.** *P. antiqua* Yapen Id. (JP); **Figures 9-10.** *P. antiqua rosasumma* n. ssp. non-types (JP); **Third row, Type shells:** **Figure 11.** *P. antiqua* Unsang, Borneo Holotype; **Figure 12.** *P. antiqua leonardi* Ansus, Giobi (Jobi, Yapen) Id., New Guinea Lectotype; **Figure 13.** *P. antiqua horderi* New Guinea Holotype; **Figure 14.** *P. antiqua* var. *xanthosoma* (ANSP) New Guinea Holotype. **Fourth row, Specimen shells from New Guinea:** **Figures 15-16** *P. antiqua*, 15. Muswar Id. and 16. Yapen Id.; **Figure 17** *P. antiqua leonardi* Ansus, Giobi (Jobi, Yapen) Id.; **Figure 18** *P. translucida* Manokwari (JA). [Image credits: 3-10 JP; 11 Pilsbry, 1891 pl. 17, f. 39; 12 van Benthem Jutting, 1962 pl. 2, f. 10; 13 Pilsbry, 1891 pl. 14, f. 58; 14 ANSP, 2019; 15-17 Museum für Naturkunde, 2019a-c; 18 JA]